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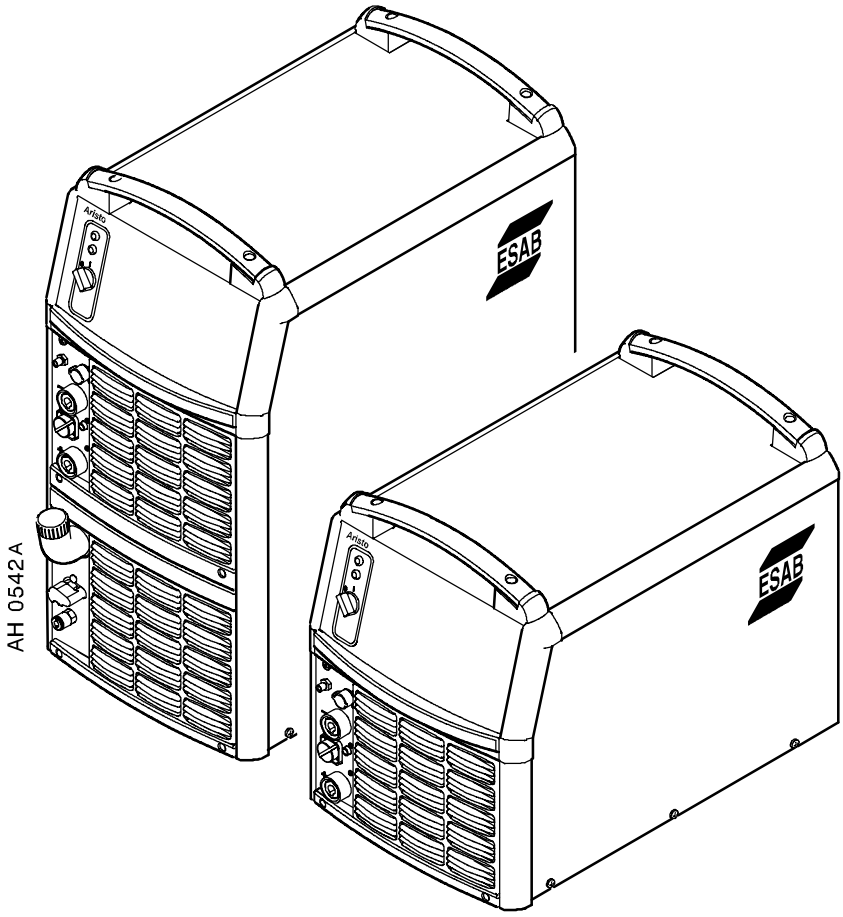
AristoMig U500

400 V version



Instruction manual

0459 291 001 GB 050517

Valid for serial no. 304-xxx-xxxx, 445-xxx-xxxx, 524-xxx-xxxx

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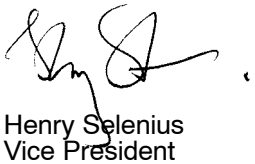
1 DIRECTIVE

DECLARATION OF CONFORMITY

ESAB Welding Equipment AB, S-695 81 Laxå, Sweden, gives its unreserved guarantee that welding power source AristoMig U500 from serial number 304 complies with standard IEC/EN 60974-1, in accordance with the requirements of directive (73/23/EEC) and addendum (93/68/EEC) and with standard EN 50199 in accordance with the requirements of directive (89/336/EEC) and addendum (93/68/EEC).

Laxå 2003-04-07



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2 SAFETY

Users of ESAB welding equipment have the ultimate responsibility for ensuring that anyone who works on or near the equipment observes all the relevant safety precautions. Safety precautions must meet the requirements that apply to this type of welding equipment. The following recommendations should be observed in addition to the standard regulations that apply to the workplace.

All work must be carried out by trained personnel well-acquainted with the operation of the welding equipment. Incorrect operation of the equipment may lead to hazardous situations which can result in injury to the operator and damage to the equipment.

1. Anyone who uses the welding equipment must be familiar with:
   - its operation
   - location of emergency stops
   - its function
   - relevant safety precautions
   - welding
2. The operator must ensure that:
   - no unauthorized person is stationed within the working area of the equipment when it is started up.
   - no-one is unprotected when the arc is struck
3. The workplace must:
   - be suitable for the purpose
   - be free from drafts
4. Personal safety equipment
   - Always wear recommended personal safety equipment, such as safety glasses, flame-proof clothing, safety gloves.
   - Do not wear loose-fitting items, such as scarves, bracelets, rings, etc., which could become trapped or cause burns.
5. General precautions
   - Make sure the return cable is connected securely.
   - Work on high voltage equipment **may only be carried out by a qualified electrician.**
   - Appropriate fire extinquishing equipment must be clearly marked and close at hand.
   - Lubrication and maintenance must **not** be carried out on the equipment during operation.

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WARNING

ARC WELDING AND CUTTING CAN BE INJURIOUS TO YOURSELF AND OTHERS. TAKE PRECAUTIONS WHEN WELDING. ASK FOR YOUR EMPLOYER'S SAFETY PRACTICES WHICH SHOULD BE BASED ON MANUFACTURERS' HAZARD DATA.

ELECTRIC SHOCK - Can kill
- Install and earth the welding unit in accordance with applicable standards.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing.
- Insulate yourself from earth and the workpiece.
- Ensure your working stance is safe.

FUMES AND GASES - Can be dangerous to health
- Keep your head out of the fumes.
- Use ventilation, extraction at the arc, or both, to take fumes and gases away from your breathing zone and the general area.

ARC RAYS - Can injure eyes and burn skin.
- Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing.
- Protect bystanders with suitable screens or curtains.

FIRE HAZARD
- Sparks (spatter) can cause fire. Make sure therefore that there are no inflammable materials nearby.

NOISE - Excessive noise can damage hearing
- Protect your ears. Use earmuffs or other hearing protection.
- Warn bystanders of the risk.

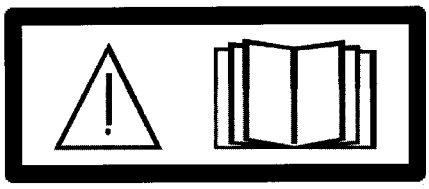
MALFUNCTION - Call for expert assistance in the event of malfunction.

READ AND UNDERSTAND THE INSTRUCTION MANUAL BEFORE INSTALLING OR OPERATING.

PROTECT YOURSELF AND OTHERS!

ESAB can provide you with all necessary welding protection and accessories.

WARNING!
Read and understand the instruction manual before installing or operating.



WARNING!
Do not use the power source for thawing frozen pipes.

This product is solely intended for arc welding.

3 INTRODUCTION

The **AristoMig U500** is a MIG/MAG / TIG welding power source, which can also be used for MMA welding.

There are two variants of the power source:

- AristoMig U500 without cooling unit
- AristoMig U500 with cooling unit

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NB: These instructions describe an AristoMig U500 with a cooling unit.

The power source is intended for use with the AristoFeed 30 or AristoFeed 48 wire feed units.

All the settings are made from the wire feed unit or control box AristoPendant U8.

ESAB's accessories for the product can be found on page 17.

3.1 Equipment

The AristoMig U500 power source is supplied complete with terminating resistor, 5m return cable and instruction manual.

4 TECHNICAL DATA

	AristoMig U500
Mains voltage	400V, ±10%, 3~ 50/60 Hz
Primary current I_{max} MIG/MAG I_{max} MMA I_{max} TIG	 39 A 40 A 31 A
No-load power demand when in the energy-saving mode, 6.5 min. after welding	50 W
Voltage/current range MIG/MAG MMA TIG	 8-60 V / 16-500 A 16- 500 A 4 - 500 A
Permissible load at MIG/MAG 60 % duty cycle 100% duty cycle	 500 A / 39 V 400 A / 34 V
Permissible load at MMA 60 % duty cycle 100% duty cycle	 500 A / 40 V 400 A / 36 V
Permissible load at TIG 60 % duty cycle 100% duty cycle	 500 A / 30 V 400 A / 26 V
Power factor at maximum current	0.85
Efficiency at maximum current	86 %
Open-circuit voltage MIG/MAG MMA TIG	 72 - 88 V 68 - 80 V 72 - 88 V
Operating temperature	-10 to+40˚C
Dimensions, lxwxh with cooling unit	625 x 394 x 496 mm 625 x 394 x 776 mm
Continual A-weighted sound pressure	<70 db
Weight with cooling unit	69 kg 89 kg
Insulation class transformer	H
Enclosure class	IP 23
Application class	S

Cooling unit	
Cooling power	2500 W at 40˚C temp. difference and flow1.5 l/min
Coolant	50 % water / 50% glycol
Coolant quantity	5.5 l
Maximum water flow	2.0 l/min
Maximum number of water-cooled welding guns/torches that may be connected	two MIG welding guns or one TIG torch and one MIG welding gun

Duty cycle

The duty cycle refers to the time as a percentage of a ten-minute period that you can weld at a certain load without overloading.

Enclosure class

The **IP** code indicates the enclosure class, i. e. the degree of protection against penetration by solid objects or water. Equipment marked **IP23** is designed for indoor and outdoor use.

Application class

The symbol S indicates that the power source is designed for use in areas with increased electrical hazard.

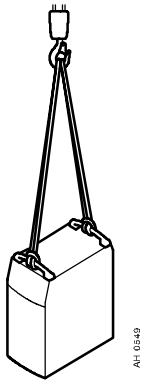
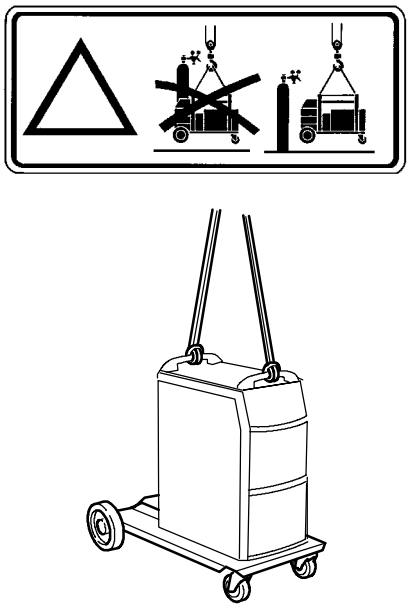
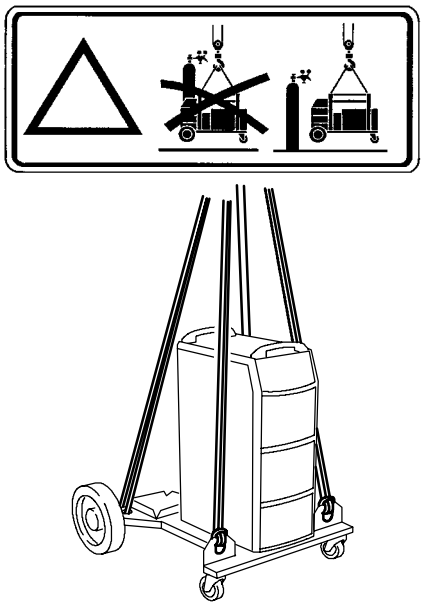
5 INSTALLATION

The installation must be executed by a professional.

WARNING!

This product is intended for industrial use. In a domestic environment this product may cause radio interference. It is the user's responsibility to take adequate precautions.

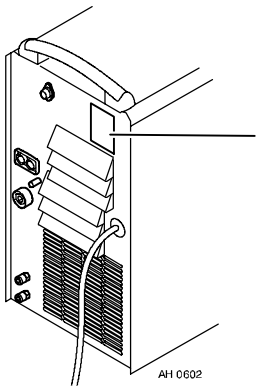
5.1 Lifting instructions

Power source	Trolley and power source	Trolley2 and power source
		

5.2 Placing

Position the welding power source such that its cooling air inlets and outlets are not obstructed.

5.3 Mains power supply



Check that the unit is connected to the correct mains power supply voltage, and that it is protected by the correct fuse sizes. A protective earth connection must be made, in accordance with regulations.

Rating plate with supply connection data

Recommended fuse sizes and minimum cable areas

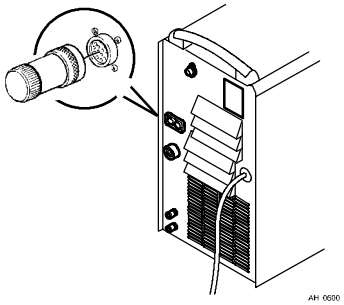
AristoMig U500	400 V 3~ 50 Hz
Mains voltage	400 V
Mains cable area, mm^2	4G6
Phase current, I RMS	31 A
Fuse	
Anti-surge	35 A
Type C MCB	40 A

NB: *The mains cable areas and fuse sizes as shown above are in accordance with Swedish regulations. They may not be applicable in other countries: make sure that the cable area and fuse sizes comply with the relevant national regulations.*

5.4 Terminating resistor

In order to avoid communication interference, the ends of the CAN bus must be fitted with terminating resistors.

One end of the CAN bus is at the control panel, which has an integral terminating resistor. The other end at the power source must be fitted with the terminating resistor, as shown on the right.



6 OPERATION

General safety regulations for the handling of the equipment can be found on page 3. Read through before you start using the equipment!

6.1 Connections and control devices

1 Connection for cooling water from the TIG torch – RED

2 Connection with ELP* for cooling water to the TIG torch – BLUE

3 Cooling water filler

4 Connection for welding current cable (+) at MMA welding or for return cable at TIG welding

5 Connection for remote control

6 Connection for return cable (–) or for welding current cable at TIG welding

7 Connection for start signal from the torch.

8 Connection for gas to the TIG torch

9 Main power supply switch, 0 / 1 / START

10 White indicating lamp – Power supply ON

11 Orange indicating lamp – Overheating

12 Fuse

13 Connection for control cable to the wire feed unit or to the terminating resistor

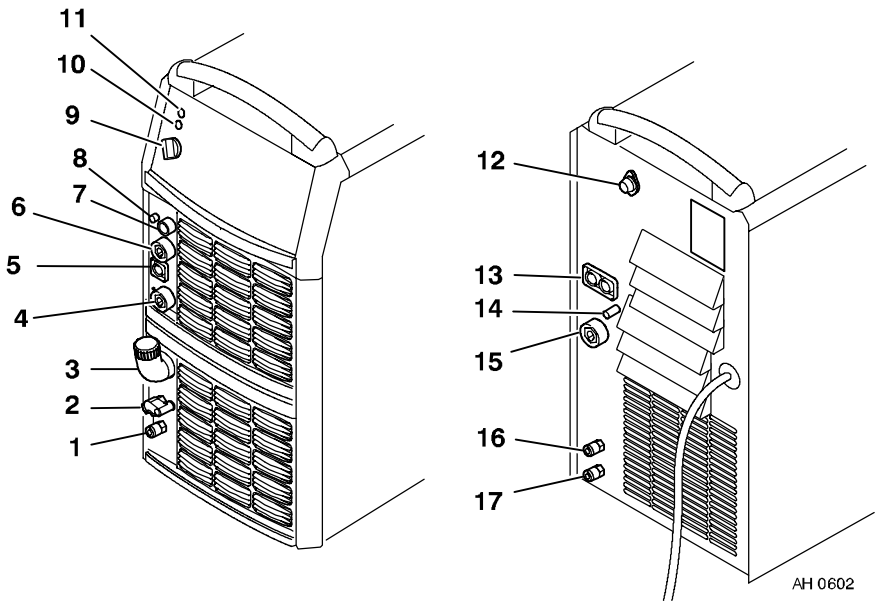
14 Connection for gas hose

15 Connection for welding current to the wire feed unit

16 Connection for cooling water to the wire feed unit – BLUE

17 Connection for cooling water from the wire feed unit – RED

* ELP = ESAB Logic Pump, see point 6.5



6.2 Turning on the power source

Turn on the mains power by turning switch (7) to the ”START” position. Release the switch, and it will return to the ”1” position.

If the mains power supply should be interrupted while welding is in progress, and then be restored, the power source will remain de-energised until the switch is again turned manually to the ”START” position.

Turn the unit off by turning the switch to the ”0” position.

Whether in the event of a loss of power supply or of turning the power source off in the normal manner, welding data will be stored so that it is available next time the unit is started.

6.3 Fan control

The power source fans continue to run for 6,5 minutes after welding has stopped, and the unit switches to energy-saving mode. They start again when welding restarts.

The fans run at reduced speed for welding currents up to 180 A, and at full speed for higher currents.

6.4 Overheating protection

The power source has three thermal overload trips which operate if the internal temperature becomes too high, interrupting the welding current and lighting the orange indicating lamp on the front of the unit. They reset automatically when the temperature has fallen.

6.5 Cooling unit

Water connection (TIG welding)

The cooling unit is equipped with a detection system **ELP** (**E**SAB **L**ogic **P**ump) which checks that the water hoses are connected.

The power source On/Off switch must be in the “0” position (Off) when connecting a water-cooled TIG torch.

If a water-cooled TIG torch is connected, the water pump starts automatically when the main On/Off switch is turned to ”START” and/or when welding starts. After welding, the pump continues to run for 6,5 minutes, and then switches to the energy-saving mode.

Function when welding

To start welding, the welder presses the welding gun trigger switch. The power source turns on and starts the wire feed and the cooling water pump.

To stop welding, the welder releases the welding gun trigger switch. Welding ceases, but the cooling water pump continues to run for 6,5 minutes, after which the unit switches to energy-saving mode.

Water flow guard

The water flow guard interrupts the welding current in the event of loss of coolant, and displays an error message on the control panel. The water flow guard is an accessory.

6.6 Remote control unit

The program version in AristoPendant U8 should be 1.20 or higher. Aristo machines with intergral control panels should have program version 1.21 or higher, in order for the remote control to function correctly.

When the remote control unit is connected, the power source and wire feed unit are in remote control mode; the buttons and knobs are blocked. The functions can only be adjusted via the remote unit.

If the remote control unit is not to be used, the remote control unit must be disconnected from the power source / wire feed unit, as otherwise it will remain in remote control mode.

For more information about the operation of the remote control unit, see the operating instructions for the control panel.

7 MAINTENANCE

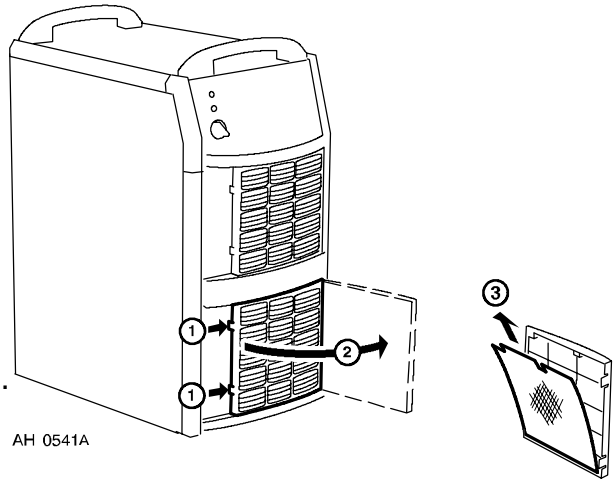
Regular maintenance is important for safe, reliable operation.

Maintenance must be executed by a professional.
Only those persons who have appropriate electrical knowledge (authorized personnel) may remove the safety plates.

Note!
All guarantee undertakings from the supplier cease to apply if the customer himself attempts any work in the product during the guarantee period in order to rectify any faults.

7.1 Cleaning the air filter

- Release the cover plate with the dust filter (1).
- Swing out the cover plate (2).
- Remove the dust filter (3).
- Blow it clean with compressed air at reduced pressure.
- Replace the filter with the finer mesh on the side against the cover plate (2).
- Replace the cover plate with the filter.



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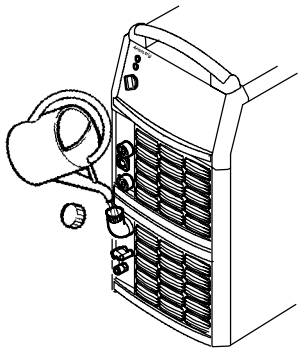
7.2 Topping up the coolant



We recommend a 50/50 % mixture of water and ethylene glycol.

Top up with coolant until it is up to the level of the filling hole.

8 FAULT TRACING

Try these recommended checks and inspections before sending for an authorised service technician.

Type of fault	Action
No arc.	• Check that the mains power supply switch is turned on. • Check that the welding current supply and return cables are correctly connected. • Check that the correct current value is set. • Check the fuse.
Welding current is interrupted during welding	• Check whether the thermal overload trips have operated (indicated by the orange lamp on the front panel). • Check the main power supply fuses.
The thermal overload trips operate frequently.	• Check to see whether the air filters are clogged. • Make sure that you are not exceeding the rated data for the power source (i.e. that the unit is not being overloaded).
Poor welding performance.	• Check that the welding current supply and return cables are correctly connected. • Check that the correct current value is set. • Check that the correct electrodes are being used. • Check the main power supply fuses.

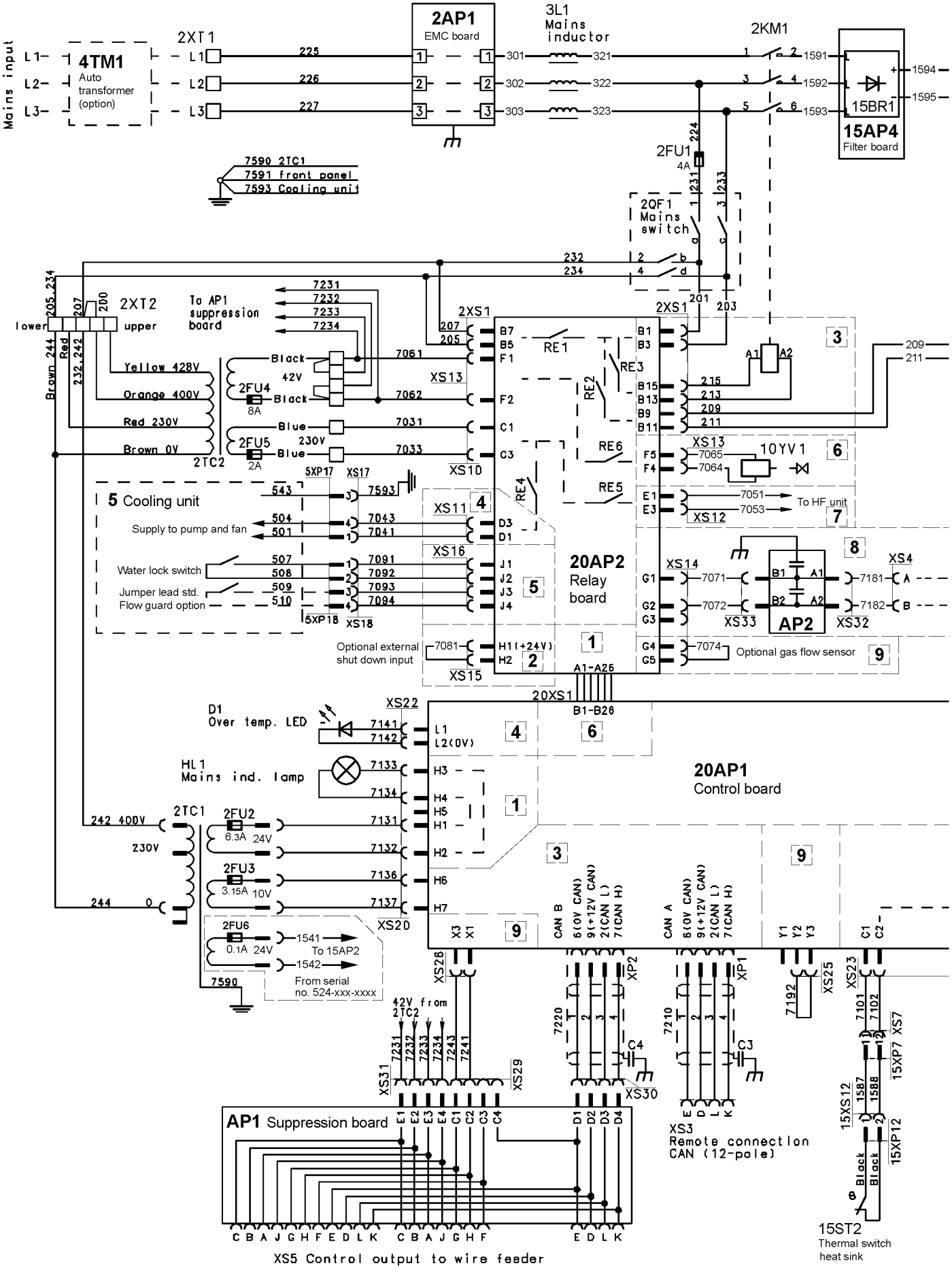
9 ORDERING OF SPARE PARTS

AristoMig U500 is designed and tested in accordance with the international an European standards IEC/EN 60974-1 and EN 50199.
It is the obligation of the service unit which has carried out the service or repair work to make sure that the product still conforms to the said standard.

Repair and electrical work should be performed by an authorized ESAB serviceman. Use only ESAB original spare and wear parts.

Spare parts may be ordered through your nearest ESAB dealer, see the last page of this publication.

Diagram



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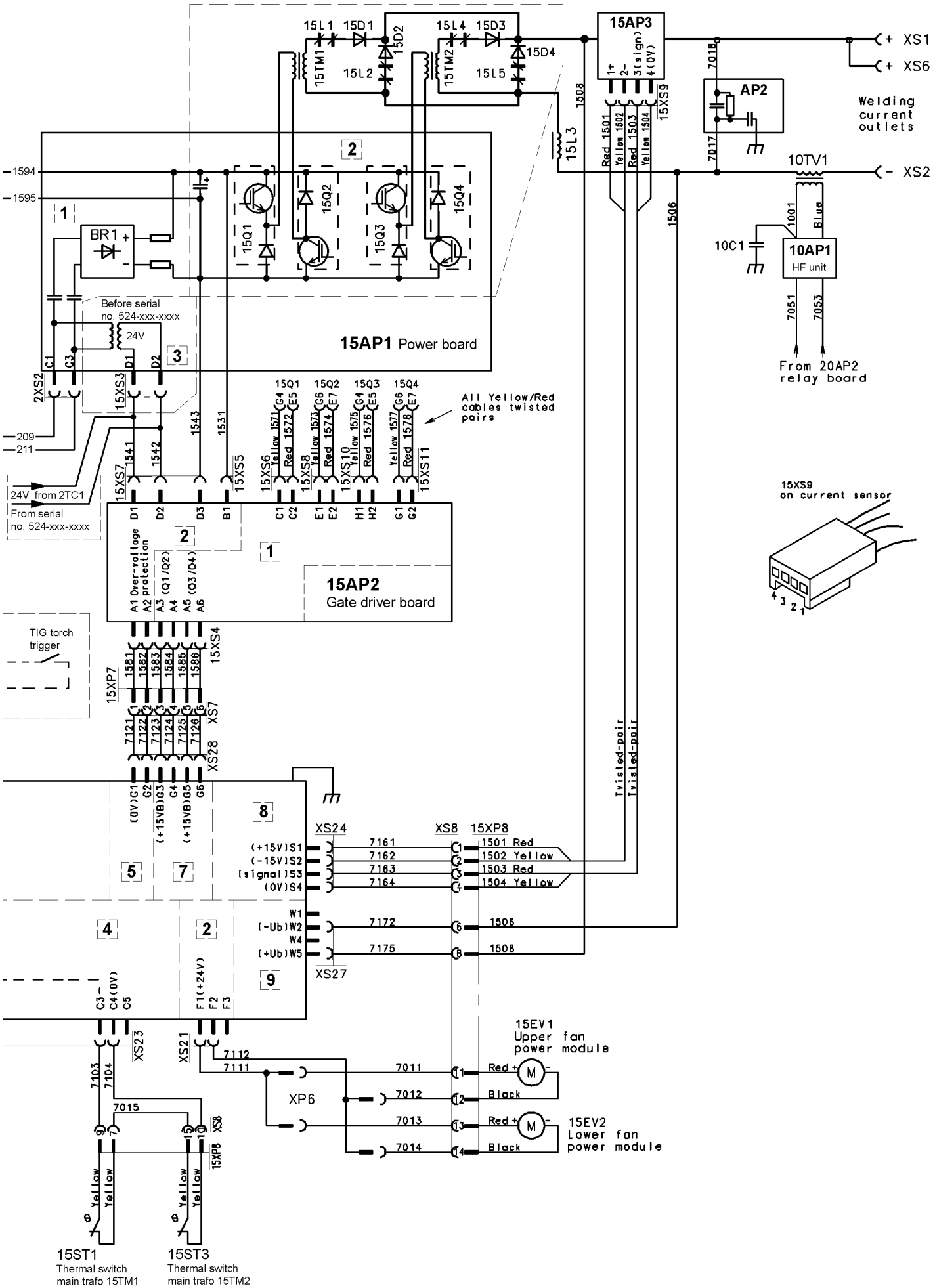
15AP3
15L1 15D1 15D2 15L4 15D3
15TM1 15L2 15TM2 15L5 15D4
+ XS1
+ XS6
AP2
Welding current outlets
15L3
10TV1
- XS2
1594
1595
BR1
15Q1 15Q2 15Q3 15Q4
15AP1 Power board
Before serial no. 524-xxx-xxxx
24V
10C1
10AP1
HF unit
From 20AP2 relay board
All Yellow/Red cables twisted pairs
209
211
24V from 2TC1
From serial no. 524-xxx-xxxx
15AP2
Gate driver board
15XS9 on current sensor
TIG torch trigger
15XP7
15XS4
XS7
XS28
XS24
XS8
15XP8
(+15V)S1
(-15V)S2
(signal)S3
(0V)S4
1501 Red
1502 Yellow
1503 Red
1504 Yellow
W1
(-Ub)W2
W4
(+Ub)W5
XS27
Twisted-pair
Twisted-pair
XS23
XS21
XP6
15EV1 Upper fan power module
15EV2 Lower fan power module
Red
Black
Yellow
15ST1 Thermal switch main trafo 15TM1
15ST3 Thermal switch main trafo 15TM2

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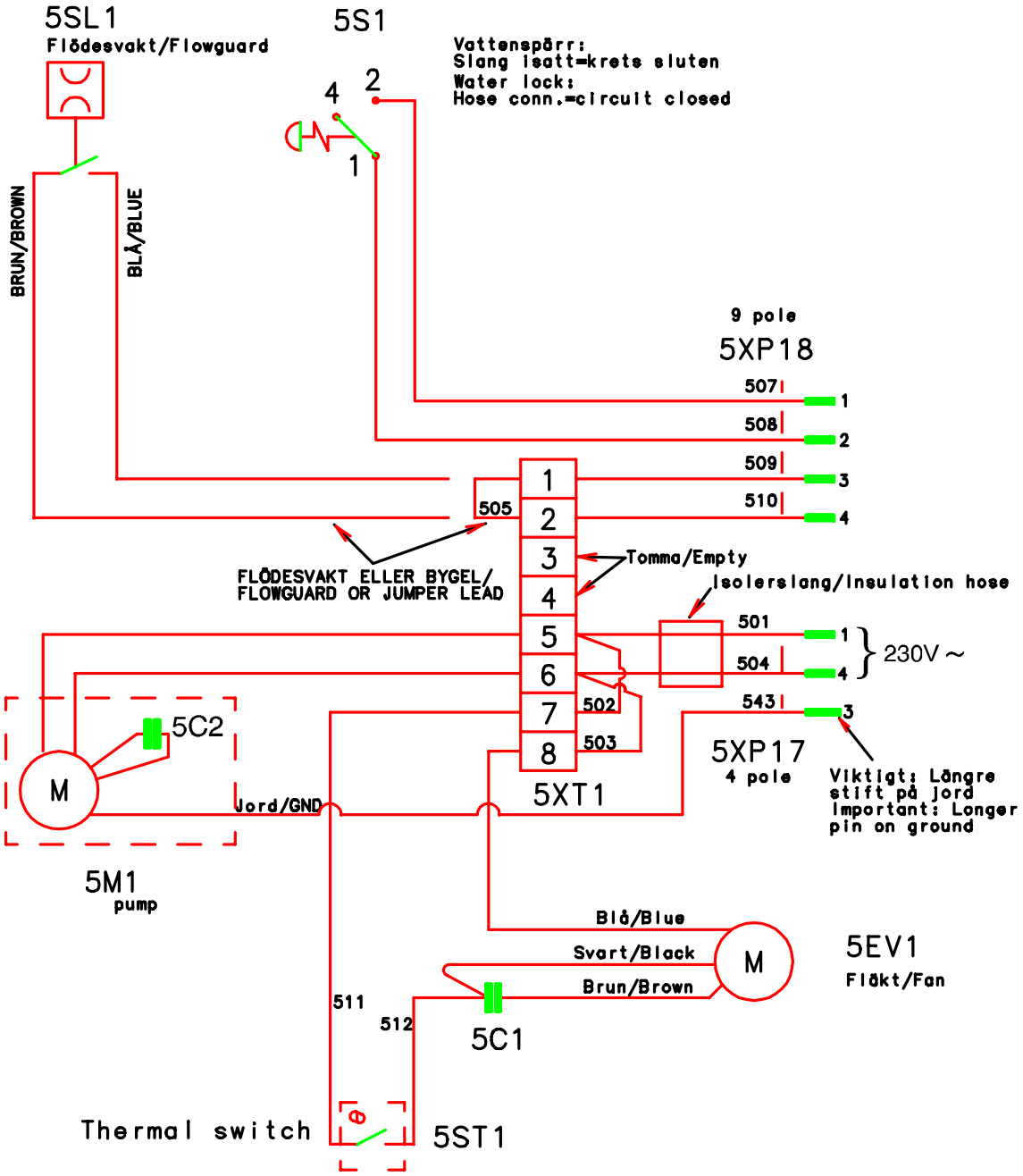
Cooling unit



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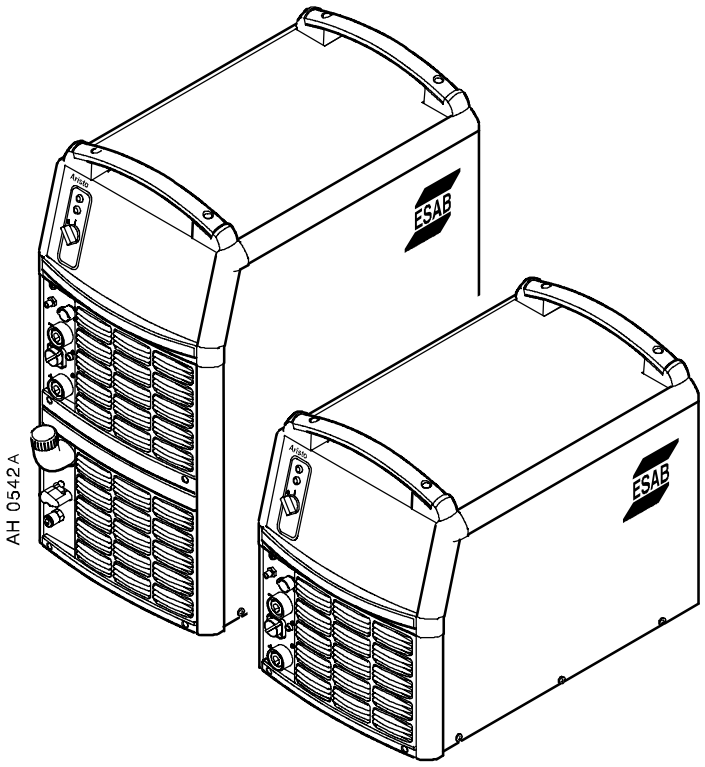
Ordering number

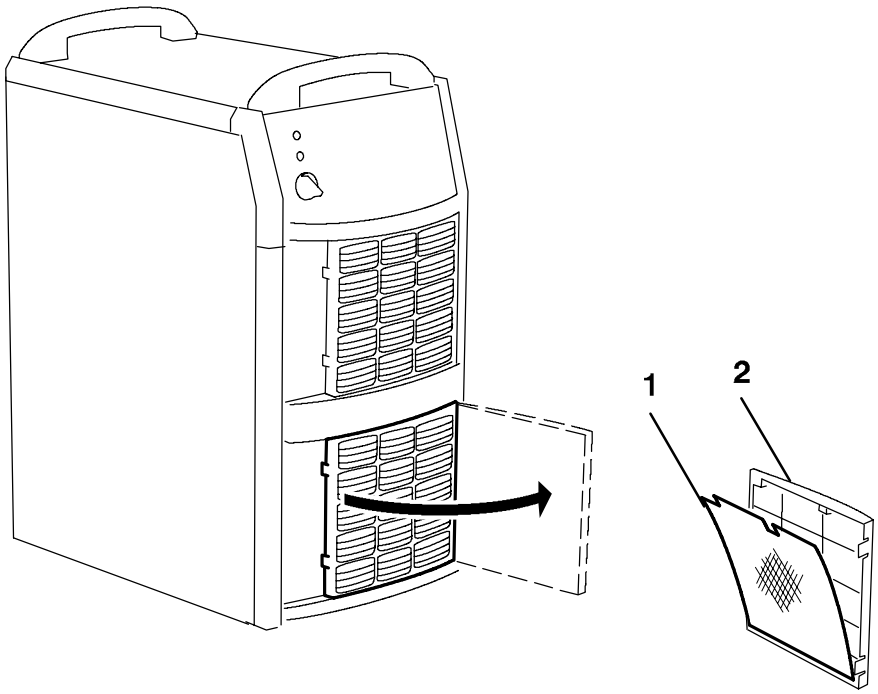


Ordering no.	Denomination	Type	Notes
0459 230 885	Welding power source	AristoMig U500	
0459 230 886	Welding power source	AristoMig U500	with cooling unit
0459 291 990	Spare part list	AristoMig U500	

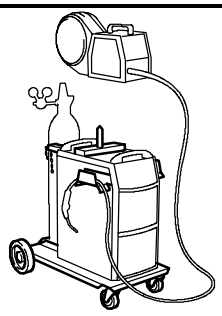
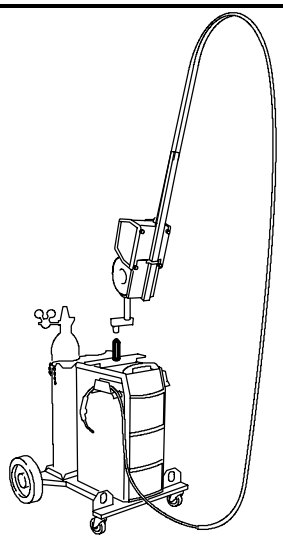
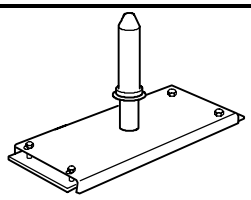
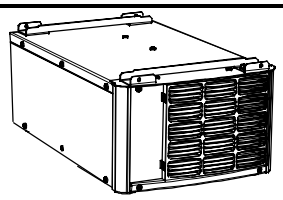
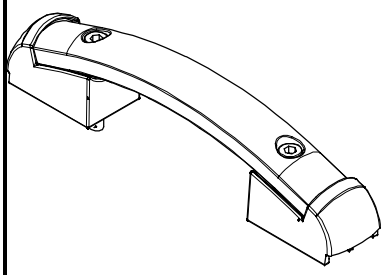
The spare parts list is available on the Internet at **www.esab.com**
Under ”Products” and ”Welding & cutting equipment”, you will find a link to the page where you can both search for and download instruction manuals and spare parts lists.

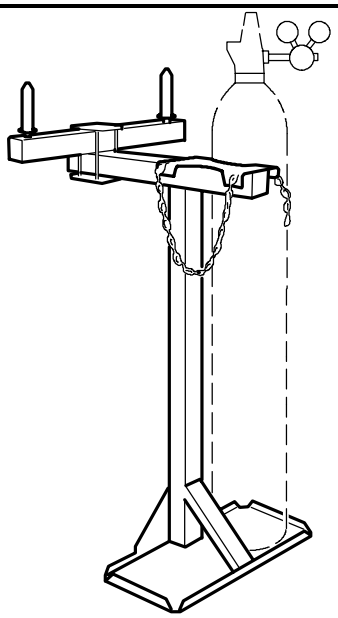
Spare parts list

Item	Qty	Ordering no.	Denomination
1		0458 398 001	Filter
2		0458 383 001	Front grill

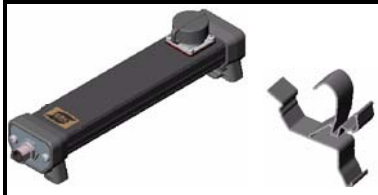


Accessories

	**Trolley** for AristoMig 0458 530 880
	**Trolley 2** for AristoMig (for feeder with counterbalance device and/or 2 gas bottles) . 0458 603 880
	**Guide pin** 0458 731 880
	**Autotransformer TUA2** 0459 145 880
	**Handle (1 piece) with mounting screws . .** 0459 307 881



Feeder stand 0458 522 880



Remote control adapter RA12 12 pole 0459 491 910
For analogue remote controls to CAN based equipment.

Remote control unit MTA1 CAN 0459 491 880

MIG/MAG: wire feed speed and voltage
MMA: current and arc force
TIG: current, pulse and background current

Remote control unit M1 10Prog CAN 0459 491 882

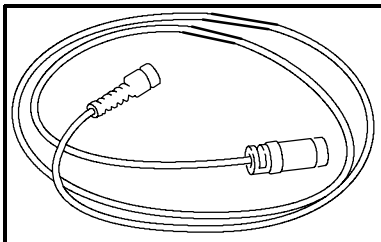
Choice of on of 10 programs
MIG/MAG: voltage deviation
TIG and MMA: current deviation

Remote control unit AT1 CAN 0459 491 883

MMA and TIG: current

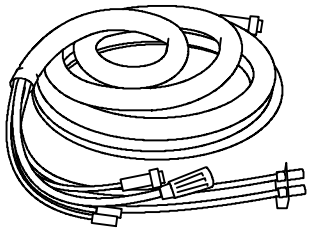
Remote control unit AT1 CF CAN 0459 491 884

MMA and TIG: rough and fine setting of current.



Remote control cable 12 pole – 4 pole

5 m	0459 554 880
10 m	0459 554 881
15 m	0459 554 882
25m	0459 554 883
0.25 m	0459 554 884

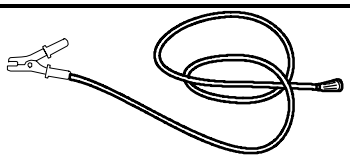


Connection set

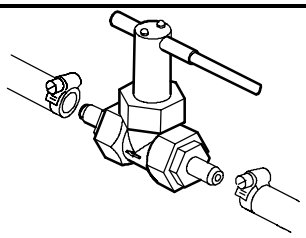
1.7 m	0456 528 880
5 m	0456 528 890
10 m	0456 528 881
15 m	0456 528 882
25 m	0456 528 883
35 m	0456 528 884

Connection set water

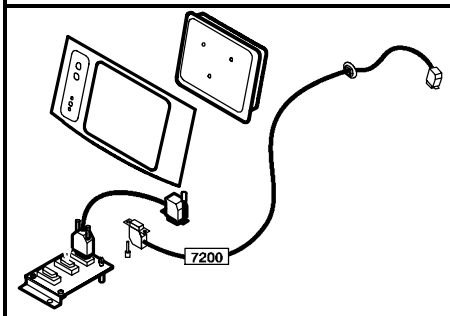
1.7 m	0456 528 885
5 m	0456 528 895
10 m	0456 528 886
15 m	0456 528 887
25 m	0456 528 888
35 m	0456 528 889



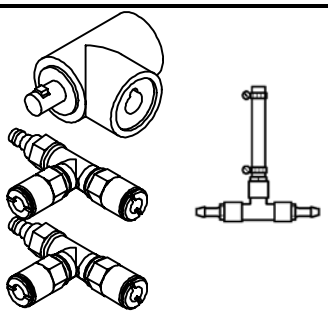
Return cable 5 m 70 mm^2 . . . . . 0156 743 881



Water flow guard 0.7 l/min 0456 855 880



MMC kit AristoMig 0459 579 880



Connection set
for connection of two wire feed units 0459 546 880

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